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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/773,156
Filing Date: January 31, 2001
Appellant(s): BRULS ET AL.

MAILED

MAY 14 2007

Technology Center 2600

Terry W. Kramer
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/19/07 appealing from the Office action mailed 8/21/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

A Notice of Appeal was filcd on June 27, 2005. Subsequently, an Appeal Brief was filed on August 31, 2005. In response to the August 31, 2005 Appeal Brief, an Office Action was issued on November 14, 2005, withdrawing the previous rejection but stating a new ground of rejection based on a new reference Sazzad (U.S. Patent Number 6,122,321). Following the November 14, 2005 Office Action, Appellant requested reinstatement of the previous Appeal pursuant to 37 CFR 1.193(b)(2)(ii) and concurrently filed a Supplemental Appeal Brief on December 19, 2005. In response to the December I 9, 2005 Supplemental Appeal Brief, an Office Action was issued on March 14, 2006, withdrawing the rejection based on Sazzad but stating a new ground of rejection based on a new reference Timmermans (U.S. Patent No. 5,543,925). The new rejection led to this Appeal. None of the previous Appeal Briefs were followed by an Examiner's Answer. Thus, no previous Appeal related to this application has been considered by the Board.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

Claims 1-12 are rejected and on appeal.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu (5,485,279) in view of Timmermans (5,543,925).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,485,279	YONEMITSU ET AL	1-1996
5,543,925	TIMMERMANS	8-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu (5,485,279) in view of Timmermans (5,543,925).

Regarding claims 1 and 6, Yonemitsu discloses a method and video encoder for encoding images in a first resolution mode with reference to a reference image having said first resolution (fig.20 is a video encoder that encodes images in MPEG standard including I, P and B images with a first resolution, where I and P frames are reference images), the encoder comprising a memory for storing said reference image with said first resolution (fig.20, element 63 is a memory for storing reference image in first resolution mode); and control means for selectably encoding said images in a second, lower resolution mode with reference to two reference images having said second resolution (fig.20, element 54 controls the image prediction encoding mode), and for storing said two reference images with the second resolution in said memory (fig.20, element 121 is a memory for storing reference images in second resolution mode).

Yonemitsu does not specifically disclose the memory for storing reference images in both first and second resolutions. However, Timmermans teaches the use of a storage or memory file that can store first and second resolutions (see fig.2 and col.7, ln.36-67, Timmermans discloses that storage or memory file IP1 stores multiple resolutions of a picture, where subfile TV stores an image with a resolution corresponding to an NTSC or PAL TV picture, and subfile TV/4 stores an image with a second resolution, a reduced resolution by a factor of 2, clearly, there are at least two or more resolutions storing reference images). Therefore, it would have been obvious

to one of ordinary skill in the art to combine the teachings of Yonemitsu and Timmermans, as a whole, for reducing costs and improving efficiency during the encoding and decoding of high quality image data for a clearer display during image playback (Timmermans' col.4, ln.25-30).

Regarding claims 2 and 7, Yonemitsu discloses further including a motion estimation circuit applying a predetermined search strategy in the first resolution mode to search motion vectors representing motion between an input image and the reference image, said motion estimation circuit being arranged to apply said search strategy in the second resolution mode to both reference images (fig.20, element 64 is the motion estimation/compensation circuit that applies a search strategy in the first resolution mode and also note there is an arrow that directs the motion estimation circuit to apply the search strategy in the second resolution mode to elements 123 and then to element 122).

Regarding claims 3 and 8, Yonemitsu discloses wherein selected images are encoded in the second resolution mode with respect to one of said reference images, the motion estimation circuit being arranged to apply the search strategy in a first pass to search motion vectors with a first precision (fig.20, element 64 is the motion estimation/compensation circuit that applies a search strategy in the first resolution mode and also note there is an arrow that directs the motion estimation circuit to apply the search strategy in the second resolution mode to elements 123 and then to element 122 for searching motion vectors with a first precision), and to apply said search strategy in a second pass to refine the precision of the motion vectors found in

the first pass (fig.20, note output of element 122 goes back to the DCT 164 for a second pass to refine the precision of the motion vectors found in the first pass).

Regarding claims 4 and 9, Yonemitsu discloses further arranged to selectably encode images in a third, yet lower resolution mode with reference to two reference images having said third resolution, said motion estimation circuit being arranged to apply said search strategy in the third resolution mode to both reference images, and to apply the search strategy for each reference image in a first pass to search motion vectors with a first precision (fig.20, element 202 is the motion estimation/compensation circuit that applies the search strategy in the third resolution mode to the reference images and also note there is an arrow that directs the motion estimation circuit to apply the search strategy in the third resolution mode to elements 204 and then to element 202 for searching motion vectors with a first precision), and to apply said search strategy in a second pass to refine the precision of the motion vectors found in the first pass (fig.20, note output of element 202 goes back to the DCT 203 for a second pass to refine the precision of the motion vectors found in the first pass).

Regarding claims 5 and 10, Yonemitsu discloses wherein said reference image having the first resolution is a previous image of a sequence of images (fig.20, note the reference image of a sequence of images stored in element 63 is in the first resolution), one of the reference images having the second resolution is a previous image of said sequence, and the other one of the reference images having the second resolution is a

subsequent image of said sequence (fig.20, note the reference images of a sequence of images stored in element 124 is in the second resolution).

Regarding claims 11 and 12, Yonemitsu discloses a method and video decoder for decoding images in a first resolution mode with reference to a reference image having said first resolution (fig.21 performs the decoding operation of fig.20; also, fig.21 is a video decoder that decodes images in MPEG standard including I, P and B images with a first resolution, where I and P frames are reference images), the decoder comprising a memory for storing said reference image with said first resolution (fig.21, element 75 is a memory for storing reference image in first resolution mode), characterized in that the video decoder comprises control means for decoding said images in a second, lower resolution mode with reference to two reference images having said second resolution (fig.21, note the IVLC 141 decodes prediction mode, motion vector, and quantization scale information, coded from control means of fig.20, for decoding the reference images in the second, lower resolution mode), and for storing said two reference images with the second resolution in said memory (fig.21, element 85 stores reference images in the second resolution).

Yonemitsu does not specifically disclose the memory for storing reference images in both first and second resolutions. However, Timmermans teaches the use of a storage or memory file that can store first and second resolutions (see fig.2 and col.7, ln.36-67, Timmermans discloses that storage or memory file IP1 stores multiple resolutions of a picture, where subfile TV stores an image with a resolution corresponding to an NTSC or PAL TV picture, and subfile TV/4 stores an image with a

second resolution, a reduced resolution by a factor of 2, clearly, there are at least two or more resolutions storing reference images). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Yonemitsu and Timmermans, as a whole, for reducing costs and improving efficiency during the encoding and decoding of high quality image data for a clearer display during image playback (Timmermans' col.4, ln.25-30).

(10) Response to Argument

Regarding lines 4-6 on page 8 of appellant's remarks, applicant asserts that one of ordinary skill in the art would not turn to Timmermans for any teaching involving improvement of encoding images, much less encoding images in a lower resolution. The examiner respectfully disagrees. In column 7, lines 36-67, Timmermans discloses the coded pictures are stored into memory, wherein there are more than two or multiple resolutions, TV/4, TV, 4TV, 16TV, 64TV, 256TV. In column 8, lines 47-52, Timmermans discloses the coded pictures of different resolutions are stored into files, and that the low-resolution picture is displayed within the outline of the higher resolution picture. In column 9, lines 3-10 and lines 19-29, Timmermans discloses the use of residual coding, ie. MPEG inter-frame coding, quantization and Huffman coding applied to encoding images of different resolution levels. On page 3 of appellant's specification, appellant states that MPEG is well known in the art. Definitely, frame memories are applied as it is intentional in standard coding block MPEG, especially the intermediate results, occurred in residual MPEG coding, are stored in memories. In Figure 2, Timmermans discloses the generation of several layers of resolution not optimal to store all the

multiple resolution image data into a frame memory. Thus, one of ordinary skill in the art would rely on Timmermans for any teaching involving improvement of encoding images, including encoding images in a lower resolution.

Regarding lines 13-15 on page 8 of appellant remarks, appellant states that hindsight reconstruction was applied. The examiner respectfully disagrees. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Regarding lines 16-18 on page 8 and lines 4-7 on page 9 of appellant remarks, appellant states that the combination of Yonemitsu and Timmermans has not established a prima facie case of obviousness. The examiner respectfully disagrees. the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Yonemitsu and Timmermans, as a whole, for reducing costs and improving efficiency during the encoding and decoding of high quality image data for a clearer display during image playback, as disclosed in Timmermans' column 4, lines 25-30.

Regarding lines 1-4, 7-9 and 12-14 on page 10 and lines 1-3 and 19-21 on page 12 of appellant's remarks, appellant states that the same memory is being used for storing one reference image in first resolution and for storing two reference images in second resolution for selectably encoding images in two distinct resolutions. The examiner respectfully disagrees. Yonemitsu does not specifically disclose the memory for storing reference images in both first and second resolutions. However, Timmermans teaches that storage or memory file IP1 stores multiple resolutions of a picture, where subfile TV stores an image with a resolution corresponding to an NTSC or PAL TV picture, and subfile TV/4 stores an image with a second resolution, a

reduced resolution by a factor of 2, clearly, there are at least two or more resolutions storing reference images, as disclosed in fig.2 and column 7, lines 36-67. Thus, Timmermans discloses the use of a storage or memory file that can store first and second resolutions. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Yonemitsu and Timmermans, as a whole, for reducing costs and improving efficiency during the encoding and decoding of high quality image data for a clearer display during image playback, as disclosed in Timmerman's column 4, lines 25-30.

Regarding lines 15-20 on page 10 of appellant's remarks, appellant states that Timmermans only teaches storing images in difference resolutions in a database medium, as opposed to storing images in a memory, wherein the picture files and subfiles representing lower resolutions, mentioned in the Final Office Action are stored in a database medium, which is known to be record carrier such as a compact disc, rather than stored in a memory. The examiner respectfully disagrees. Timmermans performs normal frame memory storage since Timmermans teaches the use of residual coding, ie. MPEG inter-frame coding, quantization and Huffman coding applied to encoding images of different resolution levels, as disclosed in column 9, lines 3-10 and lines 19-29. The appellant's specification on page 3 discloses that MPEG is well known in the art. Definitely, frame memories are applied as it is intentional in standard coding block MPEG, especially the intermediate results, occurred in residual MPEG coding, are stored in memories. In figure 7, Timmermans discloses the use of a control RAM (random access memory) for storing control parameters. Therefore, it would

have been obvious to one of ordinary skill in the art to expand this concept of storing images with different resolutions with other types of memories than a database medium since memory is cheap, convenient and cost effective for application of storing image data. Since Timmermans does disclose the use of RAM, like the appellant's specification on page 6, last paragraph, where RAM is used by appellant, implementing the RAM in Timmermans to store image data of different resolutions is practical and reasonable by one of ordinary skilled in the art.

Regarding lines 4-6 on page 12 of appellant's remarks, appellant states that there is a difference between the Timmermans reference and the present invention. The examiner respectfully disagrees. In column 7, lines 36-67, Timmermans discloses the coded pictures are stored into memory, wherein there are more than two or multiple resolutions, TV/4, TV, 4TV, 16TV, 64TV, 256TV. In column 8, lines 47-52, Timmermans discloses the coded pictures of different resolutions are stored into files, and that the low-resolution picture is displayed within the outline of the higher resolution picture. In column 9, lines 3-10 and lines 19-29, Timmermans discloses the use of residual coding, ie. MPEG inter-frame coding, quantization and Huffman coding applied to encoding images of different resolution levels. On page 3 of appellant's specification, appellant states that MPEG is well known in the art. Definitely, frame memories are applied as it is intentional in standard coding block MPEG, especially the intermediate results, occurred in residual MPEG coding, are stored in memories. In Figure 2, Timmermans discloses the generation of several layers of resolution not optimal to store all the multiple resolution image data into a frame memory. Thus,

there is no difference between the teachings of the appellant's present invention and the Timmermans reference.

For all of the reasons described above the combination of Yonemitsu and Timmermans meets the broad limitations of claims 1 and 6.

Dependent claims 2-5 and 7-10 are rejected for similar reasons as claims 1a and 6 since dependent claims 2-5 and 7-10 depend respectively from claims 1 and 6.

Regarding the last paragraph on page 13 to the top paragraph on page 14, appellant argues that the limitation "same memory for storing one reference images in first resolution and for storing two reference images in second resolution" is not disclosed in Yonemitsu and Timmermans. The examiner respectfully disagrees. For the same reasons as described above for claims 1 and 6, Yonemitsu does not specifically disclose the memory for storing reference images in both first and second resolutions. However, Timmermans teaches that storage or memory file IP1 stores multiple resolutions of a picture, where subfile TV stores an image with a resolution corresponding to an NTSC or PAL TV picture, and subfile TV/4 stores an image with a second resolution, a reduced resolution by a factor of 2, clearly, there are at least two or more resolutions storing reference images, as disclosed in fig.2 and column 7, lines 36-67. Thus, Timmermans discloses the use of a storage or memory file that can store first and second resolutions. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Yonemitsu and Timmermans, as a whole, for reducing costs and improving efficiency during the encoding and decoding of high

quality image data for a clearer display during image playback, as disclosed in Timmerman's column 4, lines 25-30.

In conclusion, the rejection of claims 1-12 is maintained.

(11) Evidence Appendix

None. There is no Evidence on Appeal.

(12) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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